Abstract

A PHY for transmitting link frames on a home phone line network without the need of a MAC layer. The PHY transmits an initial link frame if the PHY has not transmitted a frame for a time interval, as specified by the Home Phoneline Networking Alliance. After transmission of the initial link frame, the transmit-clock signal to the MAC is disabled so that the MAC does not request the PHY to transmit a frame. If a collision is detected during transmission of the initial link frame, a counter is set to zero and the PHY transmits back-to-back link frames, where the initial link frame and the back-to-back link frames are each separated by an IPG (Inter Packet Gap). When transmitting these back-to-back link frames, the counter is incremented each time a collision is detected. When the counter equals a specified number, the transmit-clock signal to the MAC is enabled and the PHY waits for a random interval of time before beginning the above-described process again. This process is repeated until a link frame is successfully transmitted without a collision. In this way, higher priority is given to colliding link frames than to colliding data frames, and the case of colliding link frames is efficiently handled by the randomization process so that a live-lock situation is prevented.